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ABSTRACT

The psychometric properties of the Autonomy and Relatedness Inventory (ARI)--a measure of the quality of primary intimate relationships--was assessed. This 30-item instrument was designed to assess both positive and negative dimensions of any type of dyadic relationship. Cross-sectional data from in-home interviews with 213 mothers with 5- and 6-year-old children were analyzed. Data derived from a separate scale on the quality of marital relationships for a subsample of 40 married mothers also were used to assess the ARI's validity. The ARI demonstrated strong internal consistency. Maternal characteristics of age, education, income, and number of children were not correlated with ARI scores. There also were no differences in ARI scores by marital status, race, or employment status of the mother. A principal components analysis with varimax rotation reduced the items to two orthogonal dimensions: (1) support/positive regard; and (2) dominance/control. Both dimensions of the ARI were discriminable from measures of depressive and psychosomatic symptoms of the mothers. Convergent validity was supported by significant correlations between ARI subscales and subscales of Spanier's Dyadic Adjustment Scale for a subsample of 40 married mothers. This preliminary evidence suggests that the ARI holds potential for use in future studies as a measure of the quality of primary intimate relationships. A 33-item list of references and five data tables are included. (Author/SLD)

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PSYCHOMETRIC ASSESSMENT OF THE AUTONOMY AND RELATEDNESS INVENTORY: A MEASURE OF THE QUALITY OF PRIMARY INTIMATE RELATIONSHIPS

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ABSTRACT

The purpose of this study was to assess the psychometric properties of the Autonomy and Relatedness Inventory (ARI), a measure of the quality of primary intimate relationships. This 30-item instrument was designed to assess both positive and negative dimensions of any type of dyadic relationship. Cross-sectional data from in-home interviews with 213 mothers with young children were analyzed. The ARI demonstrated strong internal consistency (Cronbach's alpha = .90). Maternal characteristics of age, education, income, and number of children were not correlated with ARI scores. There also were no differences in ARI scores by marital status, race, or employment status of the mother. A principal components analysis with Varimax rotation reduced the items to two orthogonal dimensions: Support/Positive Regard and Dominance/Control. Both dimensions of the ARI were discriminable from measures of depressive and psychosomatic symptoms of the mothers. Convergent validity was supported by significant correlations between ARI subscales and subscales of Spanier's Dyadic Adjustment Scale for a subsample of 40 married mothers. This preliminary evidence suggests that the ARI holds potential for use in future studies as a measure of the quality of primary intimate relationships.

PSYCHOMETRIC ASSESSMENT OF THE AUTONOMY AND RELATEDNESS INVENTORY: A MEASURE OF THE QUALITY OF SOCIAL RELATIONSHIPS

The purpose of this report is to describe the psychometric properties of the Autonomy and Relatedness Inventory (ARI; Schaefer & Edgerton, 1982), a measure of the quality of primary intimate relationships. Previous research using the ARI presented evidence to support the reliability and validity of the measure (Hall, Schaefer, & Greenberg, 1987; Hall, Williams, & Greenberg, 1985). This report provides a more detailed analysis of the ARI's psychometric properties.

Social support has been conceptually and operationally defined from both quantitative and qualitative perspectives. With quantitative approaches such as those of Berkman and Syme (1979), Billings and Moos (1981), and Williams, Ware, and Donald (1981), a greater number of social ties or the frequency of social contacts are posited to result in more favorable health outcomes. Others assessed social support in terms of the appraisal of social interactions and the degree to which relationships are seen as beneficial (Brandt & Weinert, 1981; Norbeck, Lindsey, & Carrieri, 1981; Schaefer, Coyne, & Lazarus, 1981; Weinert & Brandt, 1987). Still others approached the concept in terms of the presence or absence of an intimate or confidant relationship (Lowenthal & Haven, 1968; Brown, Bhrolchain, & Harris, 1975). Collectively, studies of social support attested to the greater health impact of the quality of social relationships relative to the quantity of social network ties (Billings & Moos, 1981; Blazer, 1982; Hall et al., 1987; Schaefer et al., 1981). Few researchers have moved beyond assessment of the presence of a confidant or the number of social ties to examine the quality of intimate social relationships (Hall et al., 1987). Previous research provided little

insight about the specific qualities of social ties that influence health outcomes (Berkman, 1986), primarily because of the lack of psychometrically sound instrumentation.

A major problem with existing measures of social relationships and social support is their failure to take into account that the quality of relationships may vary on a continuum of supportive to unsupportive, or that a relationship may be simultaneously supportive in some respects and unsupportive or negative in others. Treating stress and social support as totally independent constructs has led to major methodological problems with their measurement (Eckenrode & Gore, 1981). Intimate relationships may be a source of interpersonal stress (Broadhead et al., 1983), creating demands, constraints, and conflicts (Schaefer et al., 1981). The costs and conflicts inherent in social relationships, referred to by Tilden and Gaylen (1987) as "the darker side of social support," must be considered along with the positive dimensions of relationships. Stewart (1989) reviewed 21 social support instruments developed by nurse researchers and found only two that acknowledged the negative side of social support.

The Autonomy and Relatedness Inventory was developed to address these gaps in instrumentation. It allows for assessment of the quality of intimate relationships and for the possibility that even though one may be named as an intimate, the quality of that relationship may vary in terms of its supportive and unsupportive attributes. To date, the ARI has been used in two published studies of low-income mothers with young children. Hall et al. (1985) investigated the relationship between depressive symptoms and quality of primary intimate relationships in mothers of young children. They found that the quality of relationships with husband and boyfriend intimates was inversely associated with depressive symptoms, whereas the quality of

relationships with other types of intimates was not.

In a subsequent study of correlates of psychosomatic symptoms in women with young children, Hall et al. (1987) found ARI scores to be negatively related to psychosomatic symptoms, but only among women who named a family of origin member as the intimate. Data from these earlier investigations were used in the present study to examine the psychometric properties of the ARI in detail.

Instrument Description

The Autonomy and Relatedness Inventory (Schaefer & Edgerton, 1982) is a 30-item measure designed to assess both positive and negative dimensions of any type of dyadic relationship. The Inventory was derived in part from the Marital Autonomy and Relatedness Inventory (MARI; Schaefer & Edgerton, 1979), a measure of the quality of marital relationships. Twenty-three items were used from this earlier inventory. Seven additional items measuring dimensions of Support and Listening were developed to strengthen the assessment of positive relationship qualities (Hall, 1984). Respondents are first asked to identify their primary intimate, defined as the most important person in their life, the person to whom they feel closest. Then they are asked to describe their current perception of the intimate's behavior toward them for each of the 30 items. A 5-point Likert scale of not at all like (1) to very much like (5) the intimate is used.

There are eight subscales: Acceptance, Relatedness, Support, Listening, Autonomy, Control, Hostile Control, and Detachment/Rejection. Both subscale scores and a total score can be derived. To form the total score, negative items are reversed and ratings summed; 30 is subtracted from the sum so that the cumulative scores range from 0 to 120. Higher scores denote more positive

ratings of the relationship. Subscale scores are derived by summation of their respective items.

METHODS

Data for this psychometric assessment of the ARI are cross-sectional and were collected during in-home interviews with 213 mothers of 5- and 6-year-old children. The sample was described in detail elsewhere (Hall et al., 1987). In addition to data on the ARI, data on the mothers' depressive and psychosomatic symptoms and sociodemographic characteristics were used in the present study. Data derived from a separate scale on the quality of marital relationships for a subsample of 40 married mothers also were used to assess the validity of the ARI.

Instruments

Depressive symptoms. The Center for Epidemiologic Studies—Depression Scale (CES-D; Radloff, 1977) was used to measure depressive symptoms. This 20-item scale has been used extensively in previous studies. Respondents were asked how frequently each symptom was experienced during the past week on a 4-point scale ranging from rarely or none of the time (0) to most or all of the time (3). The CES-D was scored by reversing the four positive items and adding those with the other 16 items to form a summary score ranging from 0-60. The CES-D repeatedly demonstrated high internal consistency and good test-retest reliability (Comstock & Helsing, 1976; Radloff 1977; Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). Substantial evidence supporting its content, criterion-related, and construct validity has been reported (Radloff, 1977; Weissman et al., 1977). Cronbach's alpha in this sample was .90.

Psychosomatic symptoms. The 15-item index of psychosomatic symptoms was derived from earlier indices, in particular the Health Opinion Survey (HOS;

Macmillan, 1957). Items are rated on a 4-point scale for frequency of occurrence during the past month (never to often) and were given in Hall et al. (1987). Ratings were summed to form a cumulative score. Cronbach's alpha for the index in this sample at one year after birth of the index child was .85; at the 5-year follow-up (Hall et al., 1987), Cronbach's alpha was .86. Support for the validity of indices from which this psychosomatic symptom measure was derived was documented in other studies (Macmillan, 1957; Saslow, Counts, & DuBois, 1951; Srole & Langner, 1959; Star, 1950).

Quality of the marital relationship. Selected items of the Dyadic Adjustment Scale (DAS; Spanier, 1976) were used to measure marital satisfaction among the subsample of married participants. This measure is composed of four subscales. Data on 5 of the 10 Satisfaction items, 4 of the 5 Consensus items, and 6 of the 13 Cohesion items were collected . Data were not collected on Affectional Expression. Items from each subscale were summed to form cumulative scores, with higher scores indicating greater satisfaction, consensus, and cohesion in the marital relationship. The DAS has been widely used to study marital relationships (Sabatelli, 1988), and its reliability and validity have been well-supported (Sabatelli, 1988; Spanier, 1976). Cronbach's alphas were .87 for Satisfaction, .65 for Consensus, and .74 for Cohesion.

Procedure

Internal consistency reliability of the ARI was assessed with Cronbach's alpha and correlational item analyses. Validity was examined conceptually as well as analytically using the t-test and correlational and factor analyses.

RESULTS

Reliability Assessment

Descriptive statistics and internal consistency reliabilities for the total ARI and the eight subscales are shown in Table 1. The Cronbach's alpha

of .90 for the total score indicates substantial internal consistency of the measure. Alphas for the subscales range from .53 to .76, all of which are acceptable given that each subscale is composed of three to four items (Zeller & Carmines, 1980). The subscales of Autonomy and Detachment/Rejection demonstrated the lowest alphas, .10 and .20 below the alphas of the other subscales, respectively.

Insert Table 1 about Here

Intercorrelations of the ARI total score and subscale scores are presented in Table 2. Only correlations between Relatedness and the negative subscales of Control and Hostile Control were not significant. The average correlation between the subscales was .42. The homogeneity of the ARI is further supported by substantial correlations between the total ARI score and subscale scores, with the average correlation being .70. It could be argued that the correlations of the ARI total score and the subscale scores are inflated by the inclusion of subscale items in the composition of the total score. However, since all subscales contain 3-4 items, no one subscale dominates the total. Any bias introduced in the correlations should be uniform across the subscale/total correlations shown in Table 2. Item-total correlations range from .31 to .71, with an average $\underline{r}$ = .52.

Insert Table 2 about Here

Validity Assessment

Content validity. This aspect of validity is supported by the methods by which the items were derived. The ARI is a short version of an earlier

relationship inventory, the Marital Autonomy and Relatedness Inventory (Schaefer & Edgerton, 1979). New items for the subscales of Support and Listening were developed based on a comprehensive review of the social support literature and earlier measures of social relationships (Hall, 1984).

Construct validity. Several approaches were used to investigate the construct validity of the ARI. No relationships between sociodemographic characteristics and the ARI total score were predicted. The ARI was not significantly correlated with age, education, or income of the mother, nor with number of children. There were no significant differences in ARI scores by race, marital status, or employment status.

Factor analytic procedures also were used to assess construct validity. The items of the ARI were expected to factor into two dimensions — one positive and the other negative. First the subscales of the ARI were subjected to principal components analysis. Application of the Scree test (Cattell, 1964) indicated that two factors should be retained and rotated. As shown in Table 3, the factor structure reflects two dimensions of relationships—Support/Positive Regard and Dominance/Control. All positive subscales load on the first factor with an average loading of .78. The three negative subscales load on Factor II with an average loading of .81. The Autonomy and Detachment/Rejection subscale loadings are the lowest on each factor, which is consistent with their lower internal consistency and variance (Table 1).

Insert Table 3 about here

As a second method to validate the two factors, the ARI items were subjected to a principal components analysis. Application of the Scree test

(Cattell, 1964) indicated that two factors should be retained and rotated. The first unrotated factor has an eigenvalue of 8.54 and explains 28.5% of the variance in the measure. The second unrotated factor has an eigenvalue of 3.56 and explains 11.9% of the variance among scale items. Four other factors in the principal components analysis had eigenvalues ranging from 1.03 to 1.44 but were not retained and rotated based on the Scree test. Table 4 displays the results of the Varimax rotation of two factors. The first factor, labeled Support/Positive Regard, is composed of all positively worded items on the ARI. One negative item from the Detachment/Rejection subscale (#28—Doesn't think about me very much) also loads on this first factor, but its loading is low (-.44). Of the 19 items, 17 comprising Factor I attained loadings greater than .45, and the average loading of the 18 positive items is .59. Loadings of these items on Factor II are negligible for all items except #3 (Respects my opinions) from the Autonomy subscale with a loading of -.38 and #7 (Tries to understand how I see things) from the Listening subscale with a loading of -.41. Cronbach's alpha for the 18 positive items is .90. The second factor, "Dominance/Control," is comprised of 11 of the 12 negative items. All of these items achieve loadings greater than .45, and the average loading is .61. None of these items load substantially on Factor I. Cronbach's alpha for the 11 negative items loading on Factor II is .85. This two factor structure accounts for 40% of the total variance among the ARI items. Rotated Factor I accounts for 57% of the common variance, while Factor II accounts for 43%. The correlation between the sum of the positive ARI items and the sum of the negative ARI items was -.42 ($p = .0001$), indicating a modest inverse relationship between the two dimensions as would be expected.

Insert Table 4 about Here

To further assess construct validity, it was hypothesized that the Autonomy and Relatedness Inventory would be divergent from depressive and psychosomatic symptoms as measured by the CES-D and the modified HOS, respectively. In separate principal components analyses for depressive and psychosomatic symptoms with ARI items, three factors were retained and rotated. In both cases, two of the factors extracted were the ARI Support/Positive Regard and Dominance/Control dimensions. The third factor was clearly defined by 17 of the 20 CES-D items in the depressive symptom analysis. For psychosomatic symptoms, all 15 of the symptom items loaded on one factor, with no overlap with the two ARI dimensions. Although these analyses were based on a total of 50 and 45 items, they meet the ratio of four subjects per item, an acceptable ratio for factor analysis.

A final method to assess construct validity was to determine whether the ARI subscales would converge with subscales of the Dyadic Adjustment Scale for the subsample of married mothers (Hall, 1984). Correlations of the ARI and DAS subscales are displayed in Table 5. All but three correlations are significant, and most are moderate in magnitude. The three nonsignificant correlations are between the negative subscales of the ARI and the DAS Cohesion subscale.

Insert Table 5 about Here

DISCUSSION

The findings of this study provide strong support for the reliability and validity of the Autonomy and Relatedness Inventory. Internal consistency estimates for the total scale and subscales were acceptable. Support for construct validity of the ARI was evidenced by several findings. None of the sociodemographic characteristics examined was related to the ARI. Factor analysis demonstrated the underlying factor structure of the ARI as hypothesized. Furthermore, the two ARI dimensions were clearly discriminable in factor analyses from measures of depressive and psychosomatic symptoms. The ARI subscales also demonstrated convergence with a well-validated measure of dyadic relationships in the subsample of married women.

The results of this research indicate that the ARI provides a psychometrically sound method for measuring the quality of intimate relationships. It lacks many of the shortcomings inherent in other measures of social support or social relationships. In particular, the ARI assesses both positive and negative dimensions, and its items are applicable to any type of dyadic relationship. Moreover, it is short and easy to administer.

Continued evaluation of the reliability and validity of the ARI is warranted. Testing of the ARI in a variety of both clinical and nonclinical populations is needed to further assess the measure's psychometric properties. The lack of associations between sociodemographic characteristics and the ARI in this study implies potential for use across a variety of populations. The measure needs testing with males as well as females and with individuals form different age groups and income levels. Until additional evidence is provided on the properties of the ARI in other samples, it is premature to recommend changes in scaling or scoring.

Further psychometric testing is being conducted in on-going studies to assess the instrument's internal consistency and the replicability of the two

factor structure reported here. The stability of the factor structure over time will be assessed in a three-wave panel study in progress (Hall & Sachs, 1989). The initial evidence reported here suggests that the ARI holds excellent potential for use in future investigations as a measure of the quality of primary intimate relationships.

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Table 1. Descriptive Statistics and Internal Consistency Reliabilities for the Total Autonomy and Relatedness Inventory and Subscales (N = 213)

Scale/ Subscale	Number of Items	M	SD	Potential Range	Actual Range	Cronbach's Alpha
Total ARI	30	94.1	16.9	0-120	33-120	.90
Control	4	5.3	4.3	0-16	0-16	.76
Support	4	14.1	2.7	0-16	4-16	.75
Listening	3	9.7	2.7	0-12	0-12	.74
Hostile Control	4	4.9	3.8	0-16	0-16	.72
Relatedness	4	12.8	2.9	0-16	2-16	.71
Acceptance	4	12.2	3.0	0-16	2-16	.71
Autonomy	3	9.2	2.6	0-12	0-12	.62
Detachment/ Rejection	4	1.7	2.2	0-16	0-10	.53

Table 2. Intercorrelations of ARI Subscales and the ARI Total Score (N = 213)

SUBSCALES	SUBSCALES							ARI TOTAL
	Relatedness	Support	Listening	Acceptance	Detachment/ Rejection	Control	Hostile Control	
Autonomy	.39	.43	.54	.60	-.30	-.40	-.29	.68
Relatedness		.64	.61	.54	-.30	-.12[a]	-.04[a]	.60
Support			.61	.61	-.33	-.23[b]	-.20[b]	.68
Listening				.70	-.43	-.38	-.30	.78
Acceptance					-.45	-.38	-.36	.80
Detachment/ Rejection						.54	.49	-.67
Control							.68	-.72
Hostile Control								-.66

Note. Unless otherwise indicated, correlations are significant at p = .0001.

[a] Nonsignificant correlations.

[b] Significant at p < .001.

Table 3. Varimax Rotated Factor Matrix of the Subscales of the Autonomy and Relatedness Inventory (N = 213)

	FACTORS[a]	
SUBSCALES	I	II
Relatedness	.86	.06
Support	.83	-.11
Listening	.81	-.30
Acceptance	.78	-.37
Autonomy	.62	-.35
Hostile Control	-.06	.88
Control	-.15	.87
Detachment/Rejection	-.32	.68

[a] Factor I = Support/Positive Regard

Factor II = Dominance/Control

Table 4. Varimax Rotated Factor Matrix for Items of the Autonomy and Relatedness Inventory (N = 213)

ITEMS	FACTORS[a] I	II
17. Has a good time with me.	.73	.02
21. Does what he/she can to make things easier for me.	.73	-.13
13. Is very willing to help when I need it.	.71	.03
15. Thinks I'm worth listening to.	.69	-.21
23. Makes me feel I can tell him/her anything.	.67	-.09
27. Considers my point of view.	.66	-.27
25. Asks me to share things he/she enjoys.	.66	.10
29. Tries to comfort me when things go wrong.	.64	-.04
11. Encourages me to follow my own interests.	.61	-.20
7. Tries to understand how I see things.	.60	-.41
9. Is always thinking of things that would please me.	.59	-.02
1. Talks over his/her problems with me.	.55	.10
16. Lets me make up my own mind.	.50	-.30
19. Is happy to go along with my decisions.	.50	-.23
5. Is there when I need him/her.	.49	-.11
3. Respects my opinions.	.48	-.38
24. Thinks it's okay if I disagree with him/her.	.46	-.20
28. Doesn't think about me very much.	-.44	.18
8. Gives me as much freedom as I want.	.42	-.34

Table 4. — Continued

ITEMS	FACTORS[a] I	II
14. Wants to have the last word on how we spend our time.	-.05	.76
18. Wants to control everything I do.	-.12	.71
10. Argues back no matter what I say.	-.03	.71
22. Expects me to do everything his/her way.	-.30	.71
6. Won't take no for an answer when he/she wants something.	.00	.67
26. Finds fault with me.	-.11	.60
2. Is always trying to change me.	.00	.59
30. Acts as if he/she doesn't know me when he/she's angry.	-.18	.53
4. Acts as though I'm in the way.	-.32	.53
20. Says I'm a big problem.	-.18	.48
12. Makes fun of me.	.01	.46

[a]Factor I = Support/Positive Regard

Factor II = Dominance/Control

Table 5. Correlations of the Autonomy and Relatedness Inventory Subscales with the Modified Spanier Dyadic Adjustment Subscales For Married Women in the Sample[a]

ARI Subscales	Modified Dyadic Adjustment Subscales		
	Satisfaction	Consensus	Cohesion
Autonomy	.52**	.41**	.48**
Listening	.61***	.46**	.45**
Acceptance	.60***	.47**	.48**
Support	.52***	.60***	.35*
Relatedness	.44**	.61***	.49**
Detachment/Rejection	-.51***	-.36**	-.28
Hostile Control	-.59***	-.41**	-.24
Control	-.46**	-.32*	-.31

[a]Sample size varies from 38 to 40 due to missing data.

*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

LH/bt
WX1827
11/15/89
Revised: LH:bt
2/26/90
Revised: LH:ej
4/5/90